

Claims

What is claimed is:

- 1 1. A method for implementing packet ordering in a network
2 processor comprising the steps of:
3 receiving packets and placing said received packets on a receive
4 queue and providing a queue entry for each said received packet; said
5 queue entry including for each autoroute packet, an autoroute indication and
6 a selected transmit queue;
7 providing an associated ordering queue with said receive queue;
8 dequeuing a software-handled packet from said receive queue and
9 placing said dequeued software-handled packet on said ordering queue; and
10 automatically moving each said autoroute packet reaching a head of
11 said receive queue to said selected ordering queue.
- 1 2. A method for implementing packet ordering as recited in claim
2 1 further includes the steps of:
3 enqueueing a software-handled packet from said ordering queue to a
4 transmit queue; and
5 automatically moving each said autoroute packet reaching a head of
6 said ordering queue to said selected transmit queue.
- 1 3. A method for implementing packet ordering as recited in claim
2 1 wherein the step of providing a queue entry for said received packets; said
3 queue entry including for each autoroute packet, said autoroute indication
4 and said selected transmit queue includes the step of identifying said
5 selected transmit queue by dataflow assist hardware without software
6 intervention.
- 1 4. A method for implementing packet ordering as recited in claim
2 1 wherein the step of dequeuing a software-handled packet includes the
3 step of identifying a pointer to said software-handled packet in a packet
4 segment register.

1 5. Apparatus for implementing packet ordering in a network
2 processor comprising:
3 a receive queue for receiving packets; said receive queue including a
4 queue entry for each said received packet; said queue entry including for
5 each autoroute packet, an autoroute indication and a selected transmit
6 queue;
7 an associated ordering queue with said receive queue;
8 software for dequeuing a software-handled packet from said receive
9 queue and placing said dequeued software-handled packet on said ordering
10 queue; and
11 dataflow assist hardware for automatically moving each said
12 autoroute packet reaching a head of said receive queue to said selected
13 ordering queue.

1 6. Apparatus for implementing packet ordering as recited in claim
2 5 further includes a transmit queue; and said software for enqueueing a
3 software-handled packet from said ordering queue to said transmit queue;
4 and said dataflow assist hardware for automatically moving each said
5 autoroute packet reaching a head of said ordering queue to said selected
6 transmit queue.

1 7. Apparatus for implementing packet ordering as recited in claim
2 5 wherein said dataflow assist hardware identifies said selected transmit
3 queue for each said autoroute packet without software intervention.

1 8. Apparatus for implementing packet ordering as recited in claim
2 5 wherein said software for dequeuing said software-handled packet
3 includes a pointer to said software-handled packet in a packet segment
4 register.

1 9. A computer program product for implementing packet ordering
2 in a network processor system, said computer program product including a
3 plurality of computer executable instructions stored on a computer readable
4 medium, wherein said instructions, when executed by the network processor
5 system, cause the network processor system to perform the steps of:
6 providing a receive queue for receiving packets; said receive queue
7 including a queue entry for each said received packet; said queue entry
8 including for each autoroute packet, an autoroute indication and a selected
9 transmit queue;
10 providing an associated ordering queue with said receive queue;
11 dequeuing a software-handled packet from said receive queue and
12 placing said dequeued software-handled packet on said ordering queue; and
13 automatically moving each said autoroute packet reaching a head of
14 said receive queue to said selected ordering queue

1 10. A computer program product for implementing packet ordering
2 as recited in claim 9 includes the steps of: enqueueing a software-handled
3 packet from said ordering queue to a transmit queue; and automatically
4 moving each said autoroute packet reaching a head of said ordering queue
5 to said selected transmit queue.

1 11. A computer program product for implementing packet ordering
2 as recited in claim 9 wherein the step of dequeuing a software-handled
3 packet includes the step of identifying a pointer to said software-handled
4 packet in a packet segment register.

1 12. A computer program product for implementing packet ordering
2 as recited in claim 9 includes the step of identifying said selected transmit
3 queue by dataflow assist hardware without software intervention.